

REMARKS/ARGUMENTS

Claims

Claims 1-6 are pending in this application. No claim amendments have been made.

Claim Rejections under 35 U.S.C. §102 and §103

Claim 1 is rejected under 35 U.S.C. §102(b) as being anticipated by Imai et al., U.S. Patent No. 5,870,467; and claims 2-6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Imai et al., U.S. Patent No. 5,870,467 in view of Umebayashi et al., U.S. Patent Publication No. 2004/0010707 A1. Applicants request reconsideration of the rejections for the following reasons.

The invention relates to an IO-requesting method of issuing an IO request to a storage apparatus of a computer system by execution of a program in the computer system. The feature of this invention is that a program identifier, set in advance in the program, and a request address are applied to a first function for inputting two values to generate one value used as a new address with said program identifier appended thereto, and the IO request is issued by using the new address.

Further, the invention is directed to a storage apparatus having logical volumes capable of being protected; and a computer or computer system having a table associating a program identifier, a logical volume identifier and a network address with each other. Accordingly, if the IO request issued to the storage apparatus is an IO request issued to a protected logical volume associated with a logical volume identifier, a second function for carrying out an operation to input one value for generation of two output values, as an operation inverse to that

of the first function, generates an original request address and a program identifier. In this way, two output values are generated from one input value, which is an address specified in the IO request as the new address. Based thereon, the table is searched for a network address associated with the generated program identifier and a logical volume indicated by the generated original request address; and a communication with the storage apparatus is carried out by using the network address as an address of a transmission originator in order to issue an IO command to the original request address. Thus, in the system of the present invention and the method thereof, a computer system can access a storage apparatus in which stored data can be prevented from being stolen and changed improperly even if the computer system is used illegally, without extending a variety of protocols of communications among the system devices.

Imai discloses a data input/output management scheme for managing data input according to an input request from a program and data output according to an output request from a program, to protect electronic (written) data from unauthorized duplication. Imai finds application in the protection of written data that is protected by a copyright, for example. According to Imai et al., the apparatus has a protected data input recording unit which records program identifiers, and if the ID of a requesting program is recorded in the protected data input recording unit, data requested from the requesting program is output in accordance with the result of authentication. In particular, Imai discloses a mechanism for outputting data only by a permitted program, referring to recorded program identifiers. However, Imai does not teach or suggest a transformation mechanism for an IO request to a storage apparatus, which

generates a new address from a program identifier and a request address by applying a first function, as set forth in claim 1.

The rejection states that Imai discloses a computer system (column 8 lines 15-35), wherein a program identifier is set in advance (column 9 lines 8-21) in the program and a request address is applied to a first function for inputting two values to generate one value used as a new address with the program identifier appended thereto, in which the IO request is issued by using the new address (referring to column 4 lines 35-60, column 5 lines 16-47, column 26 lines 18-45 and Fig.1 of Imai). Applicants respectfully traverse the interpretation of the rejection, however. Apparently, the rejection is based on comparing the claimed program identifier with “the identifier for identifying the program” disclosed by Imai; the claimed request address with “an address set in a data input/output request” of Imai; and the claimed first function with “output permission means” of Imai. In the present invention, the two values that are claimed are compared to “an address set in a data input/output request” (request address) and an identifier for identifying the program (a program identifier) in Imai. Further, the new address with the program identifier appended thereto is compared to the “address set in a data input/output request permitted data access by output permission judgment means” that is disclosed in Imai.

Applicants note that Imai’s output permission judgment means receives an address set in a data input/output request (a request address) and the identifier for identifying the program (program identifier); and an address set in a data input/output request that is generated permits data access by the output permission judgment means, which the Office Action compares to the claimed new address. However, the output permission judgment means of Imai, which is

compared to the claimed first function, deals with only cases of an output request, as in “when the data input/output request received by the request reception means is a data output request”. There is no similar condition to be concerned about in the present invention, and therefore the output permission judgment means of Imai does not correspond to the claimed first function, Further, according to Imai, an address set in a data input/output request (comparable to a request address) is the same as the address set in a data input/output request that permits data access by output permission judgment means, which is alleged in the Office Action to be comparable to the claimed new address with the program identifier appended. In the present invention however, a new address is a request address embodied by a program identifier, and in general, one having ordinary skill in the art would consider a new address to have a value that is different, not the same as, that of “a request address”, as disclosed by Imai. Accordingly, the comparison between Imai and the invention as set forth in claim 1 does not rise to the level of anticipation, which requires each and every element of the invention be disclosed by the reference. Accordingly, the 35 USC §102 rejection should be withdrawn.

Umebayashi is relied upon for disclosing a data protection program that is able to effectively restrict an unauthorized access to a resource to be protected even when the resource to be protected is in a state legitimately accessed by a user. According to Umebayashi, the data protection program determines whether data access is permitted or not from a program by using an access permission management table which has columns of program information and encryption keys. Umebayashi teaches a mechanism for restricting data access in accordance with the judging result by the access permission management table. However, Umebayashi does not teach or suggest the above first function and the claimed second function for carrying

out an operation to input one value for generation of two output values as an operation inverse to that of the first function, that is to generate an original request address and a program identifier as the two output values from an address specified in the IO request as the new address. Further, in the present invention, the table is searched for a network address associated with the generated program identifier and a logical volume indicated by the generated original request address and a communication with the storage apparatus is carried out by using the network address as an address of a transmission originator in order to issue an IO command to the original request address. According to Umebayashi on the other hand, the network address is used as an address of a transmission originator in order to issue an IO command to said original request address. See the 4th embodiment of Umebayashi and FIG.10 as the example of "a network-address conversion method".

As apparent from the foregoing discussion, Imai and Umebayashi are directed to different concepts, as compared with those of the present invention. Therefore, claims 2-6 are not rendered obvious from the combination of Imai and Umebayashi.

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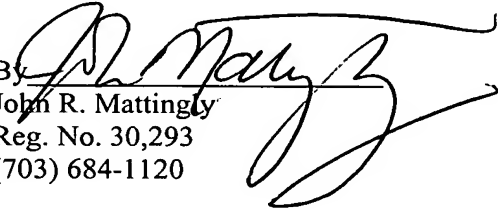
Docket No. NIT-407

CONCLUSION

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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